

REMARKS

Introduction

Claims 13-16 are currently pending after cancellation of claims 5-12. For at least the reasons set forth below, Applicant submits the pending claims are in condition for allowance.

Added Claims

Claim 13-16 have been added. The claims do not recite any new subject matter that was not disclosed in the application as originally filed.

Rejection of claims under 35 U.S.C. §112, ¶2

Claims 5-12 stand rejected under 35 U.S.C. §112, ¶2 as being indefinite based on recited claim language in claim 5. In view of the cancellation of claims 5-12, Applicant submits the rejection as moot. Additionally, claim 13 recites, *inter alia*, “determining a minimum activation duration during which a minimum quantity of fuel is injected,” thereby obviating any potential rejection applicable to the added claims 13-16.

Rejection of claims under 35 U.S.C. §102(b)

Claims 5-12 stand rejected under 35 U.S.C. §102(b) as being unpatentable over U.S. Patent No. 5,839,420 (“Thomas”). In view of the cancellation of claims 5-12, Applicant submits the rejection as moot. Applicant will address the present rejection as applied to new claims 13-16.

Claim 13 is directed to a method for controlling a fuel metering system of an internal combustion engine. As recited in claim 13 (and as described in the specification), the present method incorporates two techniques to compensate for drift phenomena appearing during the course of operation of an internal combustion engine. A first correction technique recited in claim 13 involves a so-called null quantity correction, in which the minimum activation duration is determined, i.e., the activation duration during which a minimum amount of fuel is injected. In this manner, any changes in the minimum activation duration may be corrected. A second correction technique recited in claim 13 is referred to as injector quantity compensation, which compensates for manufacturing tolerances. This technique includes determining correction values for a plurality of test points, and the correction values are read into the control unit and used for correcting a quantity characteristics map, thereby

achieving correction at various operating points. By combining these two techniques, as recited in claim 13, the relationship between the correction values at the individual test points and the correction value at the minimum activation duration is determined, i.e., transfer functions are used. Overall correction values for the test points are determined based on the correction value of the null quantity correction and the transfer functions, i.e., the transfer function indicates how ageing, which is measured via the minimum activation duration, affects the individual test points.

In contrast to the method recited in claim 13, Thomas discloses a device that compensates for injector variability using only the injector quantity compensation. As described in numerous passages in Thomas, the system determines two specific reference times for an ideal injector, a full throttle reference time (step 60 of Fig. 2), and an idle reference time (step 62 of Fig. 2). (See, e.g. col. 4, lines 1-13). From these set reference times, Thomas calibrates the respective full throttle and idle times (steps 68 and 72 of Fig. 3). The method of Thomas is based solely on the linear relationship of these calibration values that “determines the calibrated energizing times for all engine conditions ranging from engine idle to engine full throttle.” (Col. 5, lines 13-15). Claim 13 is clearly not anticipated by Thomas because, *inter alia*, Thomas clearly fails to identically disclose “**performing a null quantity correction**, wherein the null quantity correction includes **determining a minimum activation duration during which a minimum quantity of fuel is injected**, wherein the determination of the minimum activation duration includes adjusting an activation duration from an initial value, and wherein an activation duration in which a change in a characteristic signal appears is selected as the minimum activation duration.” Thomas utilizes only the injector quantity compensation technique, which does not include the null quantity correction.

For at least the foregoing reasons, claim 13 and its dependent claims 14-16 are not anticipated by Thomas.

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Conclusion

In light of the foregoing, Applicant respectfully submits that all of the pending claims 13-16 are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore respectfully requested.

Respectfully submitted,

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